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**THE IMPACT OF THE EU BUY BACK SCHEME ON THE ITALIAN FLEET: THE  
NORTHERN AND CENTRAL ADRIATIC SEA BOTTOM TRAWLERS CASE**

**Preliminary draft**

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Abstract

The European Union Generalised Buy back scheme falls within the Multi-annual Guidance Policy implemented since the early '80s. There have been four different schemes since then, each of them calling for a programmed and progressive capacity reduction.

EU Member States have been responsible for the actual implementation of the program. In Italy, over the years 1997/2002, the whole program brought a 14% reduction of the fleet, equal to 35,000 GRT and approximately 202,000 kW.

The case study is referred to the trawling segment fishing in North and Central Adriatic waters and considers the impact on the stocks, which are highly multi-specific. The scheme is voluntarily and can be considered as a retirement premium for those who have applied, therefore having a strong social character.

The impact on resources has been significant and estimates of biomass indices and LPUE show the inversion of the negative trend for some important stocks. Of course, since the time spent fishing has not been monitored over time, results could have shown an increase in days at sea. This has not been the case, due to the features of this artisanal small-scale fishery.

Key words: EU MAGP, capacity, trawlers, Adriatic Sea,

## **Introduction**

This paper, beginning with a description of the Italian buy-back program in the framework of the European Multi-Annual Guidance Plans (MAGPs), reports on a case study which aims to evaluate the impact of this programme of one Mediterranean fishery.

The case study was carried out on trawl fishing in the Central and North Adriatic (GFCM geographical sub-area, GSA, 17), a preliminary description of which is given. An analysis will be carried out on the management measures which aim to control fishing capacity and effort along with the assessment of the capacity of the fishery under discussion. The trends in fishing capacity from 1997 to 2001 will be studied considering these measures. The impact of the buy-back programme on productivity and economic rents will also be analysed.

Furthermore, it will be interesting to evaluate whether fishing capacity and effort management has had a noticeable biological impact on the resources. In order to do this, the trends of some biological parameters will be studied in the light of the trends of capacity indicators.

The analysis will show if the program has successfully met its objectives. A discussion on strengths and weaknesses will lead to an overall evaluation of the buy back programme.

## **Description of the buy-back program**

Control of the fleet's fishing capacity comes under the jurisdiction of the EC regulations and is governed by the Multi-Annual Guidance Plans (MAGPs). These plans aim to bring fishing effort in equilibrium with the existing stocks available. They allow the development of each member state's fishing fleet to be planned, establishing objectives concerning the reduction of tonnage and engine power, which have to be achieved within the set time limits.

Four MAGP plans have been implemented so far; the first two (1983-86 e 1987-91) determined the stabilisation of fleet capacities for each Member State, simply expressed in power (kW) and tonnage (GRT). The goals were modest, but for the first time gave statutory

expression of the desire to control the race for power. Different issues determined the failure of these two MAGPs, in particular (Lindebo 1999):

- the relative ambiguity of the objectives and a lack of sufficient political thrust
- continued aids to the development of the entire fisheries sector
- the lack of proper monitoring of fleet entries and exits; there was nothing to prevent decommissioned vessels being replaced by newly constructed vessels of the same capacity
- the nature of the tools used to assess the progress of the programs and their results.

The Community register of fishing vessels had not been established yet and disparate units of fishing capacity, in terms of tonnage and engine power, hindered monitoring.

The third MAGP (1992-1996) set different targets for reducing fishing effort according to the type of stock being exploited (i.e. demersal, benthic or pelagic). The translation of these targets into concrete terms prompted each MS to split its fleet. Identified on the basis of the areas harvested, the fleet was divided into segments according to the species exploited and the fishing gear used.

The need for splitting up the fleet on the basis of target species caused confusion in the fishermen operating within the Mediterranean, where they performed a multi-specific and polyvalent type of fishing. In Italy, the difficulties related to the status of the target resources for each segment were associated with those concerning the procedures for the concrete implementation of the permanent withdrawal measure. Consequently, the aims established by the 3<sup>rd</sup> MAGP were not attained.

The fourth generation of MAGPs, adopted in December 1997, fixed the objectives for the period 1997-2001. This was extended to the end of 2002<sup>1</sup>. With the approval of the 4<sup>th</sup> MAGP (1997-2001), a dedicated workgroup, which was set up by the Italian Ministry, in co-

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<sup>1</sup> Council Decision 2002/652/E

operation with the European Commission's services, submitted the Italian fleet to a re-assessment aimed at solving the problems arising both from the gathering of the data concerning single vessels and its transmission to the central file of the Community fleet.

The re-assessment performed by this group led to a wide reshaping of the Italian fleet, which was equally due to the deletion from the ALP (Fishing Licence Archive) of the vessels no longer operating and the registration of new ones.

The final objectives to be achieved by December 2002 were established by taking into account the situation of the fleet following the re-assessment of the Fishing Licence Archive (tab.1).

*Table1 – Results of the 4<sup>th</sup> MAGP at the end of 2002*

	Situation 01/01/97	Situation 31/12/2002	$\Delta$ 1997-2002	Objective 2002	% Situation/objective 31/12/2002
	GRT				
Italy	250,849	215,998	34,851	229,862	93.97
EC (*)	2,020,065	1,912,781	107,284	2,363,747	80.92
	kW				
Italy	1,497,250	1,294,886	202,364	1,338,971	96.71
EC (*)	7,895,618	6,966,645	928,973	8,070,904	86.32

(\*) Without FRA DOM

Source: Commission of the European Communities, Com (2003) 508 final

At the end of the 4<sup>th</sup> MAGP, the Italian fleet was reduced by 34,851 GRT and by 202,364 kW. This outcome was equal to a decrease in the fleet tonnage and engine power of approximately 14%. As regards the expected objectives, by the 31<sup>st</sup> December 2002, the performance of the Italian fleet was 6% higher in terms of tonnage and 3% higher in terms of engine power. With reference to the segments, the objectives were not attained for trawling,

polyvalent and tuna purseseiner fisheries, whereas, for small-scale coastal fishery, the objectives were achieved only in terms of GRT, but not of kW (tab.2).

*Table 2 – Italy, situation of the fleet broken down by segments at the end of 2002*

Segment	Description	Number of vessels	TONNAGE (GRT)			POWER (KW)		
			GRT	Objective 2002	% sit./obj. 31/12/02	kW	Objective 2002	% sit./obj. 31/12/200
4H1	Small scale coastal < 12 m	4,565	8,594	10,704	80.29%	114,760	79,994	143.46%
4H2	Bottom trawlers, coastal	1,493	66,639	64,152	103.88%	308,843	312,437	98.85%
4H3	Pelagic pair trawlers	10	584	794	73.60%	3,102	4,749	65.31%
4H4	Small purse seiners	7,248	41,777	58,198	71.78%	384,635	453,038	84.90%
4H5	Hydraulic dredgers	729	9,468	9,802	96.59%	78,936	95,108	83.00%
4H6	Polyvalents	1,578	47,818	30,839	155.06%	262,891	199,369	131.86%
4H7	Bottom trawlers, Mediterranean	119	14,819	8,025	184.66%	47,779	22,276	214.49%
4H8	Polyvalents non trawlers	15	2,356	6,301	37.39%	7,224	23,696	30.49%
4H9	Tuna purse seiners	76	6,610	3,080	214.62%	30,862	11,782	261.94%
4HA	Swordfish fleet	168	3,446	8,735	39.45%	26,119	83,158	31.41%
4HB	Trawlers and purse seiners, oceanic	25	13,529	29,232	46.28%	28,440	53,364	53.29%
NC	Not classified	4	358			1,294		
	TOTAL	16,030	215,998	229,862	93.97%	1,294,885	1,338,971	96.71%

Source: Commission of the European Communities, Com (2003) 508 final

In this period, the Italian fleet accounts for 32% of the total fishing capacity withdrawn within the EU (approximately 35 thousand out of a total of 107 withdrawn vessels belong to the Italian fleet). The higher incidence of Italian withdrawals compared with those of the Community is closely related to the failure of the first three MAGPs, which, for several reasons, did not lead to a reduction in the fishing capacity. Therefore, in Italy, the Community plan that provided for permanent withdrawals was focussed on the last MAGP.

Consequently, a marked decrease in fishing units was registered over the short period ranging from 1997 to 2002. This fall produced strong adverse effects on the Italian ichthyic sector as a whole.

**Financial support for the adjustment of the fishing effort: FIFG 1994-1999 and 2000-2006.**

The achievement of the MAGP objectives is supported by several financial measures provided for by the Structural Funds (as for fishery, the specific tool is the Financial Instrument for Fishery Guidance). Particularly, the FIFG planning period (1994-'99) extends beyond the last two MAGPs, whereas the last FIFG (2000-2006) was employed for the achievement of the 4<sup>th</sup> MAGP objectives.

The financial measures for the adjustment of the fishing effort were the following:

1. permanent withdrawal in case of decommissioning and return of the licence;
2. exports/other destination, i.e.: permanent transfer of the boat to a third country or permanent destination of a boat to a purpose other than fishery; and
3. Joint enterprises, i.e.: transfer of the vessel to a trading company with one or more members belonging to the third country in which the vessel is registered.

As for the 1994-'99 FIFG, 1355 requests of permanent withdrawal were settled, with an overall allocation of 137 million euro, of which 50% were granted by Community funds and 50% by Italian resources. Moreover, a total of 41,35 million euro was assigned to joint enterprises .

The 2000-2006 FIFG, currently in force, has to date subsidised 972 requests for permanent withdrawal, 2 requests for joint enterprises and 1 for export/other destination. The relevant fund allocation amounted to 117 million euro.

*Table 3. Financial support for the adjustment of the fishing effort: 1994-1999 and 2000-2006 FIGs.*

	FIG 94-99	FIG 00-06	FIG 94-99	FIG 00-06
	No. of projects		Financial support (EUR)	
Decommissioning	1,355	972	137,000,000	115,551,920
Export/other destination	n.p.	1	n.p.	248,930
Joint enterprises	19	2	41,350,000	945,124
TOTAL	1,374	975	178,350,000	116,745,974

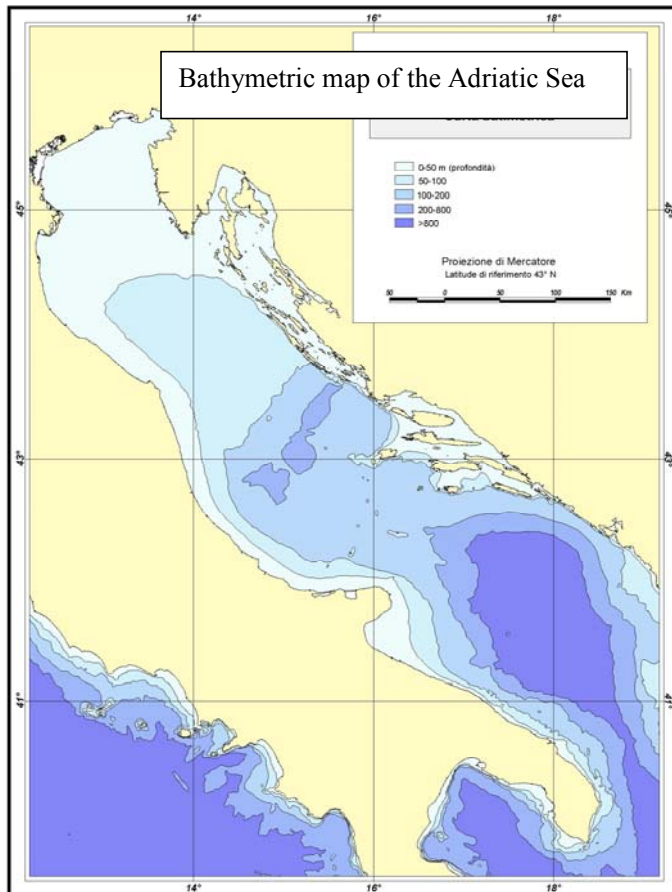
n.p.: not provided for

Source: Ministry of Agricultural and Forestry Policies, Directorate-General of Fisheries and Aquaculture.

The Italian administration acknowledged the priority of the above-mentioned measures over others provided for by FIG, seeing that, in the framework of the Community Fishery Policy, their importance was generally accepted. Moreover, in order to boost the reduction of the fishing systems that entail high environmental impact, the Italian government adopted appropriate selection criteria. Besides, the procedures for the enforcement of the permanent withdrawal measures have been gradually improved. Accordingly, it could be stated that the adjustment plan was fully implemented and worked effectively only over the last few years.

### **Description of the area (Central and Northern Adriatic) and the fleet on which the case study is focussed**

The case study deals with the trawling fishery in the Central and North Adriatic (FAO/GFCM geographical sub-area, GSA, 17). The study area covers 764 km of the Adriatic Sea coast and, for administrative purposes, is broken down into 11 ports of registration (maritime districts).



To better describe the evolution of the structure of fishing fleet considered, the analysis assumes the total values of each single variable per vessel. Data concerning the dimensions of the fleet are drawn from the Archive of Fishing Licences, whereas data on activity and production come from IREPA, which is responsible for the production of fishery statistics in Italy.

The most relevant morphological features of the Adriatic Sea are:

- lower average depth;
- absence of marked

irregularities on the sea bottom, which slopes progressively towards south-east; and

- presence of several of the largest rivers of the area along its coast, which convey the run-off waters from the Po valley and from the neighbouring slopes of the Alps and Apennines to the area.

Therefore, the Central and North Adriatic area is an environment characterised by many elements that define its peculiarity. These elements determine the wealth of its resources and the availability of stocks. In particular, its sandy, muddy and alluvial moderate slope and soft sea bottom that covers a large area from the coast has made the Adriatic sea particularly suitable for trawl fishery, bottom and beam trawling for demersal species, mid-water pair trawl for small pelagic fish and dredgers for clams. The fishing activities requiring this environment therefore flourish, from the coastal fishing valleys to the open sea.



In the area under examination, 38% of the fleet consists of vessels whose size does not exceed 12 m (<12 m) and that mainly use passive gears (segment 4H1). However, in terms of tonnage, these vessels account for 6% of the entire fleet. The polyvalent segment includes all the vessels that, over a year, exploit different fishing gears according to the seasons and the market demand. This segment is widely representative of both the Adriatic and of the entire Italian fleet (in the study area, polyvalent vessels account for 39% of the overall tonnage). Other economically important fishing segments are hydraulic dredges (as for the number of vessels, it accounts for 13% of the fleet) and the small purseseiners, which exploit pelagic species, i.e., mainly anchovies and sardines.

As for the 4H2 segment, composed of bottom trawlers, 484 trawl net vessels operating in the regions of the Central and North Adriatic were registered in 2002 in the Fishing Licences Archive. Their gross tonnage amounted to 17233 GRT, whereas their engine power was equal to 108149 kW.

*Table 4 - Composition of the fleet in Central & Northern Adriatic Sea, 2002*

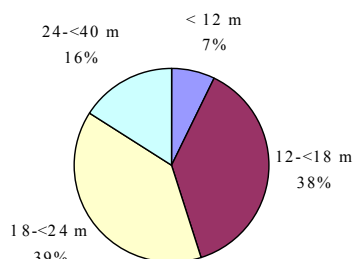
	Number of vessels		GRT 000		Engine powe (kW) 000	
	total	%	total	%	total	%
4H1 Small scale coastal < 12 m	1650	38	3,2	6	43,7	11
4H2 Bottom trawlers	484	11	17,2	34	108,1	27
4H4 Small purseseiners	752	17	3,8	7	49,6	12
4H5 Hydraulic dredgers	581	13	6,2	12	62,8	16
4H6 Polyvalents	878	20	19,9	39	136,8	34
4H9 Tuna purse seiners	13	0	0,7	1	4,1	1
	4358	100	51,1	100	405,1	100

Source: Italian Vessel Register

The category MAGP 4H2 does not cover all vessels using trawl nets. Part of them is indeed classified as MAGP 4H6 (coastal, polyvalent).

As for the dimensions of vessels, the segment under examination is highly heterogeneous. The fleet includes several small vessels (45% of these do not exceed 18 metres of length), which operate for 8-10 hours a day, whereas medium and large vessels fishing days range

Figure n. 1 - Number of vessels per class length, segment 4H2, FAO area GSA 17, 2002



between 22 and 24 hours. This indicates that a significant range of the fleet's fishing capacity is not utilised. Larger trawlers operate in some case within a three days trip per week.

Moreover, the trawl net is not a highly selective gear, targeting medium to high value demersal fish

stocks, in accordance with the times and procedures permitted in the fishing area and within the limits of relevant regulations.

Table 5 - Composition of catches per species

species	tons	%
Mantis squillid	2,514	9%
Striped mullet	2,470	9%
European hake	2,331	9%
Horned and musky octopuses	2,203	8%
Norway lobster	1,791	7%
total catches	27,298	

Source: Irepa

Changes in the type of net used, in mesh size and distribution, and in the way netting is assembled impact on caught species and length composition.

A low level of specialisation characterizes the productive mix. The

three species mainly harvested respectively account for 9% of the overall catches.

### The buy back programme in the study area

Within the study area, the number of withdrawals in agreement with the Community program amounted to 467 vessels, equal to 12 thousand tons and 61 kW.

The trawlers which complied with the plan were 135, equal to 30% of the overall withdrawals. The highest number of applications was recorded within the polyvalent segment (163, for an overall tonnage of 4300 tons). The program also affected small coastal fishery.

*Table 6 - Numbers of withdrawals in the study area*

	no.	GRT	kW
4H1 Small scale coastal < 12 m	100	343	3,653
4H2 Bottom trawlers	135	6,384	27,771
4H4 Small purseseiners	40	346	2,995
4H5 Hydraulic dredgers	27	375	3,576
4H6 Polyvalents	163	4,299	22,433
4H9 Tuna purse seiners	2	217	614
	467	11,964	61,042

Source: MiPAF, Direzione Pesca e Acquacoltura

However, given the small average size of vessels, in terms of tonnage, the incidence of this segment on the overall withdrawn amount was very low (3%).

### **Potential or actual impact of buy-back schemes on fishing capacity and fishing effort**

In Italy, as in most EU countries, fishing capacity is identified by the quantity of capital introduced in the fishery and it is often associated with the variables gross tonnage (GRT) and engine power (expressed in kW). These and other variables are analysed in this paper in order to provide a thorough picture of the bottom trawl fleet capacity in the Central and North Adriatic in the period 1997 – 2001. An attempt to evaluate the impact this fleet activity's had on the fishery resources is also presented.

Over the last five years, the fleet has been affected by a continuous decrease in all technical parameters (Table 8). Gross tonnage shows the largest reduction among all parameters involved in the process.

*Table 7. The bottom trawl fleet\* in the Central and North Adriatic*

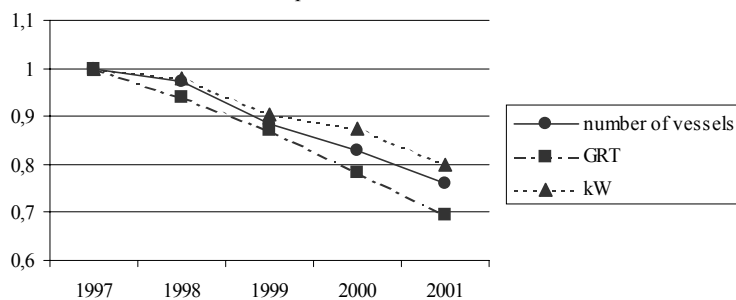
	1997	1998	1999	2000	2001
Number of vessels	661	642	584	548	502
Gross tonnage (1000 GRT)	25	24	22	20	18
Engine power (1000 Kw)	137	135	124	120	110

\*Polyvalent vessels using trawler gears are excluded

Source: Italian Vessel Register

Total tonnage (figure 2) decreased by 30% from 1997 to 2001, from 25 thousand tons to 18 thousand. In terms of average tonnage per vessel, there was a reduction of 8%; in 1997 a trawl vessel had an average tonnage of 38 grt whereas in 2001 this value was 35 grt.

Figure 2 - Trends of the bottom trawl fleet (MAGP 4H2) in the period 1997-2001



Source: Italian Vessel Register

Engine power also shows a reduction, but at lower rates.

Engine power decreased constantly in the period analysed and reached kW 110.000, with a kW 27.000 difference with reference to

1997, but the average engine power per vessel increased slightly, from 208 kW in 1997 to 219 kW in 2002.

The different trend of the two variables can be partly explained by the regulation itself and partly by its national enforcement. The aims of reducing tonnage and engine power were pursued by the Italian government by introducing a moratorium on the issue of new licences and by limiting the construction of new vessels. The building of a new trawler was only allowed if a larger vessel, not less than 120% of the new one, was scrapped. The latter measure clearly reduced the average tonnage of bottom trawlers; however, since the percentage applied to tonnage only, the reduction did not have such strong repercussions on engine power.

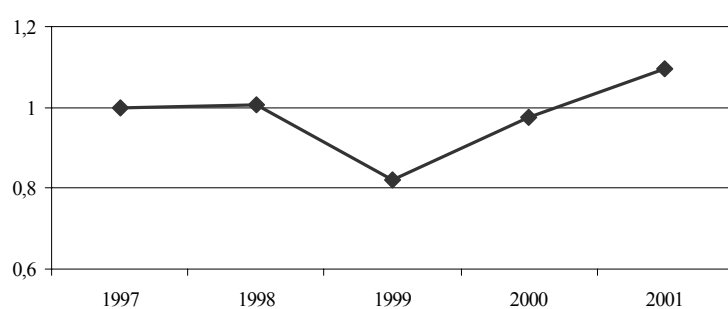
The EU buy-back program was intended to reduce capacity expressed in terms of tonnage, engine power and time spent at sea. The latter was non-compulsory and not all member states included a reduction of time spent at sea. For a number of reasons, Italy did not provide for any time reduction, even though, each year, one of the measures adopted in Italy consists of about 30 or 45 days of temporary withdrawal for the trawler segment.

In any case, as it is well known, capacity alone is not a sufficient parameter to be used for management policy, since it should also be associated with a measurement of its real utilisation (FAO 1998, Kirkley and Squires 1998). Even if the concept of “full utilisation” is

not limited exclusively to the temporal aspect, the latter is certainly an important element when the estimate of the degree of real capacity utilisation is required.

As previously stated, the national regulation assimilated these considerations. Consequently, in terms of tonnage and engine power, in Italy, the reduction in the fishing effort was supplemented by the management of fishing activities. In order to preserve the resources, measures of temporary withdrawal that coincided with the period of time subsequent to that of reproduction were established.

*Figure 3 - Trends of fishing days/vessel, base year 1997*

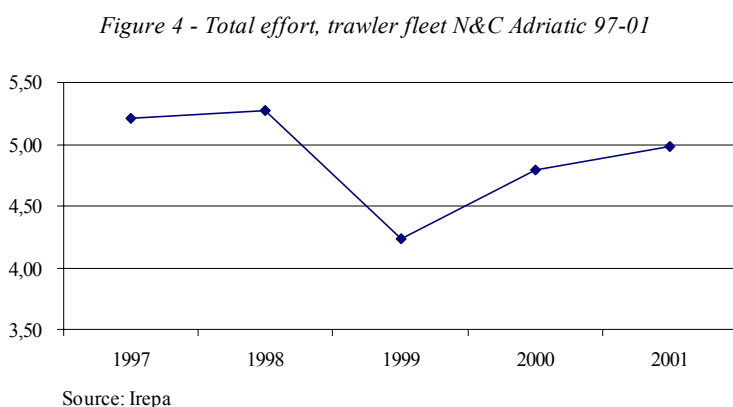


Source: Irepa

The trend of fishing days over the period under examination was influenced by the regulation governing withdrawals but also by unforeseen events, such as the Balkan conflict and the phenomenon of mucilage. In

particular, following a relatively stable period which went from 1997 to 1998, the 1999 conflict caused a 18% reduction in the overall fishing days (Figure 3). In the next two years a substantial recovery was observed. In 2000 the increase was partially hindered by the presence of mucilage, but, in spite of this, the number of fishing days managed to reach the levels attained before the war. In 2001, there was a further growth with an increase of over 12% compared to the previous year. This increase was partially due to a reduction in the number of days permitted by the temporary withdrawal. Fishing days fell from 45 of 2000 to only 30 of 2001. However, this growth was also produced by the operators' behaviour who, given the higher profits, increased their fishing activities.

The analysis of activity indicator provides a clearer picture of the capacity which is actually employed by the vessels of the fleet under examination. Following the EU definition, a



concise measurement of the fishing effort employed can be obtained by multiplying the capacity indicator (gross tonnage) by that of activity (average fishing days).

This measure shows that in 2000, compared to 1999, despite a considerable reduction in tonnage (-10%), fishing effort (GRT \* days/vessel) increased by 13%.

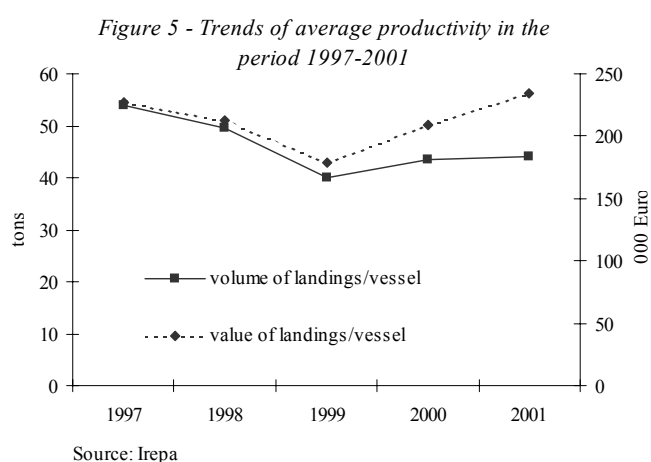
Figure 4 shows an initial decline of fishing effort until 1999, followed by a slightly increasing trend until 2001. The most marked reduction (-19%) occurred in 1999 and was chiefly due to the reduction in fishing days for the risks associated with the Balkan conflict. The following year effort began to increase slowly. This trend, as it has already been stated, was the result of a significant reduction in tonnage, almost entirely compensated by an increase in days of activity.

### **Potential or actual impact of buy-back schemes on productivity and economic rents**

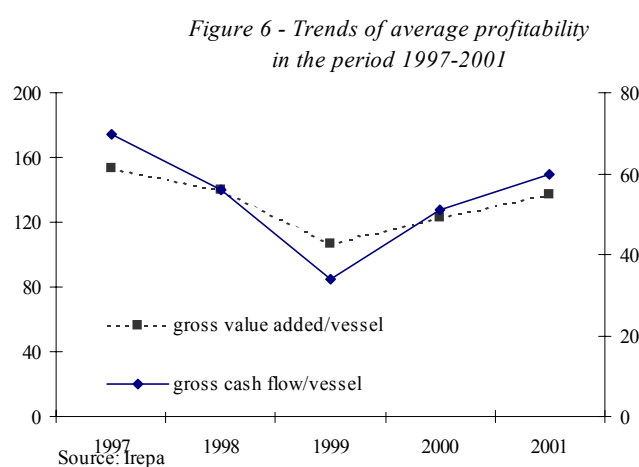
Within the study area, the daily unitary productivity of the vessels belonging to the trawler segment registered a decreasing trend up to the year 1999, when decommissioning was fully enforced.

Between 1999 and 2001 average catches per vessel remained almost unchanged, while average returns increased (fig. No. 5).

The growth of average profits was determined by the positive trend of prices.



The latter aspect becomes relevant since the trend of prices, which was mainly caused by the decline in the offer and by the steady increase in the demand for fresh ichthyic products, resulted in a growth of sales. This outcome eventually induced the operators to increase their fishing effort (see fig. No.4). Conversely, the increase in the fishing effort did not adversely affect the average catches per vessel, which remained mostly stable over the period 1999-2001. However, it is not as yet possible to assess how, in the long run, the increase in the effort would affect the state of resources.



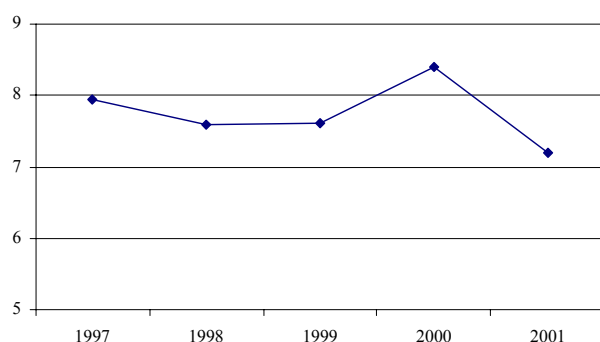
Profitability parameters (measured here by gross added value per vessel and gross cash flow per vessel) register the same trend as productive parameters. Indeed, as from 1999, owing to the marked reduction in the fishing

capacity both added value and gross profit per vessel increased after a period of considerable decline. It should be emphasized that the increase in profitability coincided with the marked growth of the unitary production costs and particularly fuel cost.

## Potential or actual impact of buy-back schemes on the state of demersal resources

In order to measure the impact of the fishery sector on natural resources, indicators of capacity, activity and effort have been completed by the LPUE (landings per unit of effort) analysis so as to assess the impact of EU buy-back policy on the state of resources.

*Figure7 - Total landings per unit of effort*



Source: Irepa

Figure 7 shows the trend of this indicator in relation to the trawl fishery system in the Central and North Adriatic. Until 1999, the indicator is subject to small variations.

In 1998, LPUE was 7.6 kg per GRT per day and this level was also

maintained in 1999. More significant variations were registered in the last two years. In 2000, a considerable increase, over 10%, highlights a rise in biomass probably due to the extended temporary withdrawal in the previous year which allowed the fish stocks to further recover. In 2001, with a reduction of 14.5%, LPUE reached its lowest level of the entire period under examination (7.2 kg). This decline is to be associated with the increase in the fishing effort (in terms of DAS) rather than with the reduction in catches which, on the contrary, remained fairly constant compared to the previous year (see fig. 5).

To best monitor the effect exerted by the buy-back program on the resources, the LPUE analysis was conducted on four of the target species harvested by the trawling fleet. The landing per unit effort of these species was compared to the biomass indices. The biomass index is a biological indicator which measures the abundance of a species. It is calculated on the basis of scientific evaluation surveys at sea and expresses an index of the quantity in kg per species per square kilometre.



Among the most important species for Adriatic trawl fisheries, the following have been considered:

- European hake (*Merluccius merluccius*)
- Norway lobster (*Nephrops norvegicus*)
- Striped mullet (*Mullus barbatus*)
- Horned octopus (*Eledone cirrhosa*)
- Musky octopus (*Eledone moschata*)

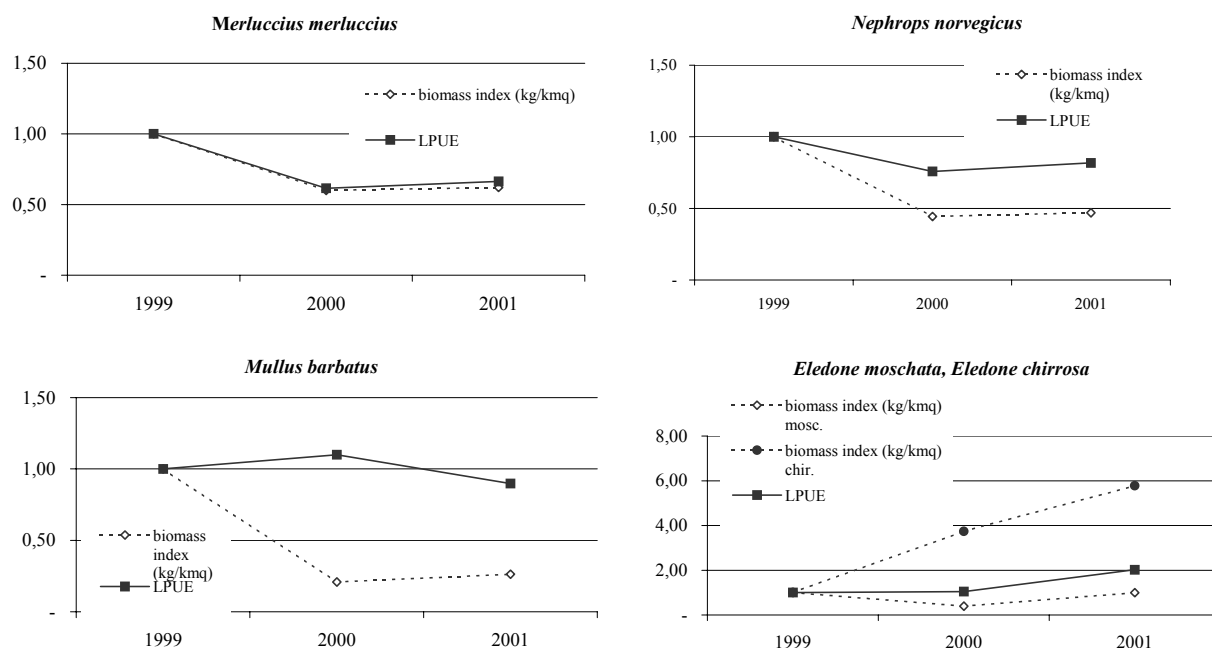
The biomass indices for these species were compared to the landing per unit of effort. As for the two *Eledone* species, only one LPUE measurement is available because this indicator is based on commercial catches and it is not possible to distinguish between horned and musky octopus.

In the case of the species examined, the tendencies of the biomass index and LPUE in the four-year period considered, follow the same trend. For both indicators, the decrease was most marked between 1999 and 2000, with a slight recovery in 2001. The LPUE increase in 2001, compared to the previous year, can be put down to the slight recovery of the resources, as it is shown by the increase in biomass. The striped mullet is the only species for which the trends of LPUE and biomass indices do not converge. This difference depends on the time over which the index has been calculated. The biomass index is calculated at the moment of reproduction and therefore only the individuals which have “survived” the previous year’s exploitation are taken into account, while the LPUE indicator refers to an entire year of activity and is influenced by the recruitment of the young mullets. This example suggests that, for species with a short life cycle, it would be better to compare the two indicators over a shorter time period (one month or three months). In any case, also for this species, data show a recovery trend in the last two years.

To sum up, it can be stated that the decommissioning scheme proved to have a positive effect on the state of the resources. It is true that there is a time gap between capacity reduction and biomass growth. However, this can be explained by taking into account the time the stock requires to adjust to the reduced effort.

Furthermore, the positive effect on the resources was also achieved thanks to the national regulation governing temporary withdrawals, which preserved juvenile target species over the period subsequent to that of reproduction. The reduction in the fishing effort induced by the implementation of the Community program alone would not have ensured the improvement of the status of the resources.

Figure 8 – bioeconomic indicators for some relevant commercial species, base year 1998



Source: Irepa and MEDITs

## Who remained and who left

The vessel-decommissioning scheme is implemented on a voluntary basis. All vessels from any segment, which have been operating for at least ten years, may adhere to it. Therefore, vessel decommissioning concerned fishing boats whose technical and dimensional features were very heterogeneous. The national administration has identified several priorities to be followed in case the number of applications exceeded that of subsidies.

In particular:

- until the achievement of the objectives established by the 4<sup>th</sup> POP, priority has been conferred to initiatives directed at decommissioning the vessels belonging to the segments that had still not attained the foreseen objectives, i.e., which employed coastal trawlers, passive gears and polyvalents;
- initiatives which provide for the decommissioning of vessels whose fishing gears entail a significant environmental impact; and
- initiatives that provide for the decommissioning of vessels which are over twenty years of age.

Within the Adriatic Sea, 135 vessels out of 467, which complied with the buy-back program, belong to the segment of trawlers. Seventy-two per cent (72%) of these fishing boats were built between 1950 and 1970. Thirty-two per cent (32%) of them have an average size ranging between 21 and 36 GRT and over 50% exceeds 36 GRT.

*Tab. 8 – Withdrawals by age groups*

Age classes	< 1950	1950-1970	>1970	Total
4H2 Adriatic	7	97	31	135
Total Adriatic	26	261	180	467
4H2 Adriatic	5.2	71.9	23.0	100
Total Adriatic	5.6	55.9	38.5	100
Total Italy	4.3	41.1	54.6	100

Source: Ministry of Agricultural and Forestry Policies. Directorate-General of Fisheries and Aquaculture

*Tab. 9 – Withdrawals by GRT classes*

GRT classes	0-2.99	3-5.99	6-9.99	10-20.99	21-35.99	36-50.99	51-99.99	>100	TOTAL
4H2 Adriatic		4	11	9	43	24	24	20	135
Total Adriatic	83	90	73	37	73	38	39	34	467
4H2 Adriatic	0.0	3.0	8.1	6.7	31.9	17.8	17.8	14.8	100
Total Adriatic	17.8	19.3	15.6	7.9	15.6	8.1	8.4	7.3	100
Total Italy	17.1	19.9	23.7	6.9	13.4	7.0	8.0	3.9	100

Source: Ministry of Agricultural and Forestry Policies. Directorate-General of Fisheries and Aquaculture

In general, the withdrawal program concerned rather aged vessels, which were characterized by high maintenance and repair costs, by inadequate levels of safety for workers and whose productive technologies were no longer advanced. In fact, 77% of the withdrawn boats were over thirty years of age.

The average size of the vessels that left the fleet is another aspect to be considered in order to identify which fishermen forwent the activity following the implementation of the scheme. In fact, these were vessels whose average size was higher than that of the segment they belonged to (47 GRT compared to 35 GRT which is the average size of trawlers operating within the Adriatic). Compared to the average dimensions, the combination age/ larger size identifies a type of vessels characterized by high maintenance costs and by inadequate efficiency compared to the modern fleet. Therefore, it is predictable that the ratio between the production value and that of consumption is lower than that registered by the rest of the fleet. In addition, the procedures associated to the allocation of subsidies for the permanent withdrawal are such that only larger vessels may actually benefit from them. Smaller vessels, instead, cannot find it profitable. Therefore, it was unsurprising that most of the operators

who forwent the activity had no intention to make further investments directed to modernize the fishing boat or to buy a new one.

The decommissioning scheme boosted the process through which the no longer competitive and obsolete fisheries forwent their activities. As a matter of fact, without the decommissioning, this process would have taken longer. Undoubtedly, the high social impact of this measure was due to its own features, since it might be considered as a bonus for an earlier retirement.

### **Winners and losers**

The bonus granted to ship owners for their permanent withdrawal represented a positive return for them. Indeed the permanence in the sector of their obsolete fishing units would be justified only by the need for a monetization and valorisation of their fishing licences. Furthermore, the above-mentioned measures allowed the units still performing their activities to benefit from the valorisation of their licences, from the profits and from the positive gross cash flow. As previously evidenced, constant decreases in catches per effort units and in profits per vessel were recorded until 1999. These trends underwent a slow decrease from 1999 onwards, given that, in this year, the measure of permanent withdrawal was strengthened. In particular, since 1999, landings per effort unit have remained basically constant. Yearly revenues per vessel, instead, have even increased thanks to the considerable rise in prices, which has characterized the national fishery sector since the early '00. Moreover, in the long run, the profitability of fishing companies and the competitiveness of national products is likely to improve as a result of the elimination of the overcapacity.

The vessels that remain in the fishery will benefit and improve the overall efficiency as global production increases. The expected effects will include a significant improvement in

the economic results of the fisheries companies. through a reduction in fixed costs and improved catches. and greater competitiveness (Lindebo. 1999).

The permanent withdrawal measure has an adverse impact on employment. As regards the segment of trawlers operating within the northern and central Adriatic. the employment loss can be approximately estimated at 500 working units. This shrinkage. however. did not negatively affect the communities and the level of employment within Adriatic fisheries. In this area. in fact. there are several job opportunities either within the sector itself or outside it (non-EEC workers are often employed in order to meet the demand for skilled labour within the main fishing harbours of the Adriatic).

#### **Discuss in retrospect. strengths and weaknesses**

The permanent withdrawal measure imposed on the Adriatic trawl fishery had a positive outcome in terms of decrease in fishing capacity. improvement of unitary profits and biomass recovery of some stocks. Despite this. some weaknesses still persist and are related to the procedures for the implementation of the measure from the national administration.

The first aspect concerns the procedures and the responsibilities related to its enforcement. On the basis of the subsidiarity principle. EU Member States are entrusted the responsibility of the actual management of the Regulations adopted by the EU. In Italy. the management Authority did not establish any initial priority and the withdrawal program had a general impact on the entire fleet. Therefore. in this case. the selection was conducted only on the basis of the date on which the applicant forwarded its request. Subsequently. the selection was performed by taking into account some priorities that can be summarized as follows:

- fleet segment. by choosing the vessels belonging to the segments which still had not attained the foreseen objectives.

- type of fishing system. by choosing the systems that had a major impact on the environment. and also with reference to the preservation of coastal resources.

By doing so. the fleet reduction program was more effectively implemented. These vessels may in fact have a considerable impact on catches and their removal may therefore have a higher impact on biological resources.

However. for the afore-mentioned reasons. the measure succeeded in dismissing the oldest and most obsolete vessels from the fleet. A different procedure might have facilitated the decommissioning of more efficient vessels while enabling the older ones to freely withdraw from the fleet.

A second relevant aspect concerns the possibility of adopting a withdrawal plan only based on the restriction of capacity. It is well known that. whenever fishing capacity is not fully employed. the overall effort might be boosted by increasing fishing time. Therefore. an increase in fishing time is likely to occur particularly when the withdrawal of the existing vessels is associated with a rise in the profits of the fisheries still in activity. Consequently. if the time variable is not monitored simultaneously. there is a considerable risk of wasting financial resources.

For example. for the Adriatic trawlers. it was possible to reveal how in the year 2000. in spite of the large reduction in tonnage. the fishing effort of single vessels remained almost unchanged compared to the previous year. Indeed. if capacity in terms of average tonnage decreased by 17.5%. the level of utilisation in terms of days' activity grew by almost by 19%.

This outcome must be judged also by bearing in mind that. in the same period. the management authority imposed a temporary withdrawal measure of 30/45 days on trawlers. in order to protect juvenile target species. Furthermore. the access to the fishing grounds was also restricted during the weeks following the temporary withdrawal

Given the number and the variety of the management measures implemented at once with the buy-back scheme, it is impossible to finally assess its effectiveness. On the contrary, it was possible to achieve positive outcomes in terms of stock recovery by combining national and community measures.

*Table 10. Periods and typology of the interruptions to fishing activity in the Central and North Adriatic in the years 1998 – 2001.*

	Periods and typology of the interruptions in the Central and North Adriatic	Duration in days
1998	20 July - 2 Sept. (Obligatory)	45
1999	14 May - 3 June (Voluntary - war)	20
	4 June - 15 July (Obligatory)	41
	16 July - 31 Aug. (Facultative)	46
2000	- 19 July (Facultative)	
	20 July - 1 Sept. (Obligatory)	44
2001	1 -30 August (Obligatory)	30
2002	24 July – 04 Sept. Trieste – Rimini (Obligatory)	45
	05 Aug. – 18 Sept. Pesaro – Pescara (Obligatory)	

### **What was learned and what would be done differently**

The 4<sup>th</sup> MAGP establishes the effort reduction objectives to be achieved for specified fleet segments, according to the stocks exploited and the fishing gear employed. This approach oversimplifies the real world and has a number of drawbacks when implemented in the Mediterranean. In fact, this approach cannot be deemed effective if we consider the following features:

- ✓ the biological resources of the Mediterranean are characterized by very high multi-specificity;



- ✓ the possibility to harvest the same resources by using all the existing fishing systems with few exceptions; and
- ✓ fishing areas, distance from the coast, vessels sizes and fishing systems cannot be wholly associated.

Specifically, experience has proved that the status of ichthyic stocks depends on both fishing capacity (in terms of tonnage and engine power) and in particular on fishing activity. This is essentially true for those fleets that tend to exploit species whose age of recruitment is low or very low and which are located in productive areas. For this reasons, we may state that the positive outcomes recorded within areas such as the Northern and Central Adriatic Sea were achieved by monitoring both the fishing capacity and the level of activity, as provided for by the relevant Italian regulation.

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